

REMARKS

By this amendment, Applicant has amended claim 1 to more clearly define her invention. In particular, the preamble of claim 1 has been amended to recite that the method is a method for projecting dimensioning and management of surface installations of a hydrocarbon reservoir under production, by means of the recited lumping method. Claim 1 has also been amended to add the steps of "simulating a production of the hydrocarbon reservoir while establishing detailed compositional profiles from the at least three-constituent composition" and "projecting dimensioning and management of the surface installations from the simulated production of the hydrocarbon reservoir." These amendments are supported by Applicant's specification, e.g., page 1, lines 17-22.

The Examiner is thanked for the telephone interview conducted between the Examiner and the undersigned on even date. During the interview, the legal basis for the rejection under 35 U.S.C. 101 was discussed. In addition, the undersigned proposed amending claim 1 or adding a new independent claim directed to a method for projecting dimensioning and management of surface installations of a hydrocarbon reservoir under production. The Examiner indicated that the addition of a new claim would likely cause the amendment to be refused entry, while amendments to the independent claim, in response to the rejection under 35 U.S.C. 101, would have a better chance for entry after final rejection. Accordingly, the foregoing amendments to claim 1 were discussed with reference to page 1, lines 17-22 of Applicant's specification. The Examiner indicated he would consider Applicant's amendment but could provide no indication as to entry of the amendment or allowance of the application

Entry of this amendment under 37 CFR 1.116 is requested. Initially, it is submitted the foregoing amendments place the application in condition for allowance

for the reasons set forth hereinafter, or at least, in better form consideration on appeal. Moreover, the amendments are necessary in order to respond to the more detailed arguments made by the Examiner in support of the rejection under 35 U.S.C. 101 in the outstanding final Office Action. Since the foregoing amendments do not delete any limitations from claim 1 (previously indicated as being allowable over the prior art) it is submitted the foregoing amendments do not require any further consideration with respect to the prior art and/or search. Therefore, entry of this amendment under 37 CFR. 1.116 is proper.

Claims 1-13 stand rejected under 35 U.S.C. 101 as allegedly being directed to non-statutory subject matter. Applicant traverses this rejection and request reconsideration thereof.

The present invention relates to a lumping method for estimating the properties or the behavior of fluids comprising liquid and/or vapor hydrocarbon phases from data relative to a reference set consisting of hydrocarbon mixtures in a series of thermodynamic states resulting from determined conditions of production of an underground hydrocarbon reservoirs. The method is useful for projecting dimensioning and management of surface installations of a hydrocarbon reservoir under production, as now more specifically set forth in the amended claims.

Such a method is a "process" that falls within one of the four enumerated categories of patentable subject matter under 35 U.S.C. 101. The Supreme Court has construed section 101 broadly, noting that Congress intended statutory subject matter to "include anything under the sun that is made by man." *Diamond v. Charkrabraty*, 447 US 303, 309 (1980). Despite this seemingly limitless expanse, the Court has specifically identified three categories of unpatentable subject matter: laws of nature, natural phenomena and abstract ideas. *Diamond v. Diehr*, 450 US

175, 185 (1981); *AT&T Corp. v. Excel Communication, Inc.*, 172 F.3d, 1352, 50 USPQ 2d 1447, 1450 (Fed. Cir. 1999), *cert. denied*, 528 U.S. 946 (1999).

In the final rejection in this case, the Examiner disagrees with applicant's previous arguments that the claimed method produces a useful, concrete, and tangible result, and alleges the claims do not "teach a tangible result," "disclose mathematical steps" and "describe abstract ideas." However, while certain types of mathematical subject matter, standing alone, represent nothing more than abstract ideas until reduced to some type of practical application, i.e., a useful, concrete, and tangible result, a mathematical algorithm is unpatentable *only* to the extent that it represents an abstract idea. *State Street Bank & Trust v. Signature Financial Group*, 149 F.3d 1368, 47 USPQ 2d 1596, 1600-1601 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1093 (1999). Thus, unpatentable mathematical algorithms are identifiable by showing they are merely abstract ideas constituting disembodied concepts or truths that are not "useful." From a practical standpoint, this means that, to be patentable, an algorithm must be applied in a "useful" way. *State Street, supra*, 47 USPQ 2d at 1601. Here, the claimed method produces a useful, concrete and tangible result and therefore constitutes patentable subject matter.

In the final rejection, the Examiner appears to require that the claims identify a "physical structure of manufacture in terms of its hardware, or a hardware software combination" for the method to satisfy the "useful, concrete and tangible result" requirement. The Examiner's reliance on physical structure is misplaced since the tangible result requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to the different state or thing. *AT&T Corp., supra*, 50 USPQ 2d at 1452-53. See, also, *Manual of Patent Examining Procedure (MPEP)* §2106.